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ABSTRACT

This paper considers the importance of information and communication in rural development programs, especially their centrality to building the knowledge, motivation, and skills that lead to behavioral change in health, nutrition, family planning, economic enterprises, and agricultural development. The countries of Thailand and Indonesia, for example, have worked directly on demonstrating the role that communication and information can play in improving the well-being of people in developing nations. Although the Indian government's National Informatics Centre has made great progress in establishing extensive databases and makes them available through telecommunication links to computer facilities at the district level, other information systems in India such as local radio and television broadcasting, the agricultural extension system, and indigenous community networks rarely intersect effectively with these databases. Two parallel communication revolutions are occurring across the world: one associated with the information superhighway and characterized by its interlocking networks, and the other being the emergence of local communication enterprises which provide rental videotapes and local and long distance telephone access. The Community-Based Communication Center seems likely to link grassroots people with relevant and important information most effectively and offers suggestions as to how such centers can be best used. The paper then focuses on the issues centering around Community-Based Communication Centers raised at the World Bank's 1996 "Think Tank." Includes 17 footnotes. (NKA)

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CONNECTING THE INFORMATION SUPERHIGHWAY TO THE GRASS ROOTS:

SOME PERSPECTIVES ON COMMUNITY-BASED COMMUNICATION CENTERS

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U.S. DEPARTMENT OF EDUCATION
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CONNECTING THE INFORMATION SUPERHIGHWAY TO THE GRASS ROOTS: SOME PERSPECTIVES ON COMMUNITY-BASED COMMUNICATION CENTERS [1]

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Information and communication have become widely recognized as important ingredients in rural development programs. They are central to building the knowledge, motivation and skills that lead to behavioral change in health, nutrition, family planning, economic enterprises, and agricultural development. In looking at information and communication technologies and their applications to the fields of agriculture, health care and education, one expert commented that information technology is, perhaps, most valuable when it is used to provide people with the information they need to make a correct decision — be they farmers trying to determine when they should plant a crop or health workers trying to diagnose an illness. He notes that the lack of timely availability of information and know-how is one of the critical barriers to development.[2] With increased emphasis on obtaining perceptions from various stakeholders concerning needs, constraints and intervention strategies, the flow of information *from* rural people has also taken on greater significance.

The World Bank recently released a document showing that 69% of Bank projects currently have information components. Notable is the title of the Bank's document: *Harnessing Information for Development: World Bank Group Vision and Strategy*.[3] The Bank is positioning itself to help nations become deeply involved in the information revolution by rendering advice, brokering knowledge, mobilizing finance, and exploring new communication-for-development frontiers. In short, the Bank is trying to influence the Information Superhighway agenda.

The Bank is not alone in this effort. Others have worked directly on demonstrating the role that communication and information can play in improving the well-being of people in developing nations. They include: the governments of Thailand and Indonesia which have made great strides in influencing population growth through innovative approaches to information technology; not-for-profit organizations such as the Academy for Educational Development (USA) which has successfully employed communication strategies in programs such as Communication for Technology Transfer in Agriculture and Communication for Child Survival (HealthCom);[4] the Center for Communication Programs at Johns Hopkins University (USA) which has pioneered the systematic use of entertainment through various media in development communication programs;[5] and the Educational Development Center, which has explored the use of inter-active radio for in-school education. To these could be added such multi-national agencies as FAO, UNICEF, WHO and UNFPA.

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[1] Prepared for the 47th Annual Conference of the International Communication Association, May 22-26, 1997, Montreal, Quebec, Canada. The author is Professor of Communication at Cornell University.

[2] P. F. Palmedo, chairman of International Resources Group, paraphrased in the proceedings of *Science and Technology for Development: Prospects Entering the Twenty-First Century, A Symposium in Commemoration of the Twenty-fifth Anniversary of the U. S. Agency for International Development*, Washington, 1987 (National Academy Press, Washington, 1988).

[3] Talero, E. and Gaudette, P. *Harnessing Information for Development, World Bank Group Vision and Strategy*, The World Bank, Washington, 1995.

[4] See HealthCom II Final Report, Academy for Educational Development, 1995; and *Results & Realities, A Decade of Experience in Communication for Child Survival*, Academy for Educational Development, Washington, 1992.

[5] Coleman, P. & Meyer, R. *Entertainment for Social Change*, Johns Hopkins University Center for Communication Programs, Baltimore, MD, 1989

Governments, businesses and technology advocates are surging ahead in the development of highly sophisticated communication systems that have already significantly changed the character of economic transactions and the consumer information and entertainment environment. The capabilities to digitize, compress and store data and to reduce greatly the costs of delivering information around the globe have changed the complexion and potential of human interaction. The opportunities to use communication technology for connecting with rural people is extraordinary: there's the World Wide Web with its array of information bulletin boards, e-mail for on-line or stored consultations, packet radios reaching more deeply into isolated areas, communication satellites for relaying data, information and messages using umbrella-sized "dishes," and the simple ubiquitous audio cassette system with its largely untapped power.

Van der Heyden has noted that today's broadcast and satellite technology provides the means by which all countries can enhance their ability to provide an improved and affordable "information utility." He indicates (1) that greater amounts of on-orbit power (through the increased efficiencies of solar power generation and higher power amplifiers) have dramatically increased the available coverage area and broadcast power of satellites, (2) that direct satellite to receiver audio broadcasting was demonstrated in the early 1990s, and (3) that application-specific integrated circuitry technology permits "the drastic reduction in cost of mass produced consumer electronic goods, and thus improves the affordability of television and radio receivers."[6] Yet, as Talero and Gaudette observe, "information technology often outruns society's capacity to apply it effectively and wisely."[7]

And thus paradoxes exist. In India, for example, the government's National Informatics Centre (NIC) has made great progress in establishing extensive data bases and makes them available through telecommunication links to computer facilities at the district level. Similarly, international agricultural data bases can be joined with domestic agricultural research data bases and networks throughout India to provide a vast interconnected information system. Few of these great information highways touch the village trail, although the need is substantial.[8]

Communication at the grassroots

There's another picture in India. Parallel but *rarely intersecting effectively* with these data bases and networks are such other information systems as local radio and television broadcasting, the agricultural extension system, and indigenous community networks. In small cities, towns, and villages across India, the information revolution consists of telephone, fax, audio and video cassettes, and local cable television systems. It is the combination of these communication technology revolutions that opens up the prospect of reaching where even well-meaning outreach people fail to go.

Data bases and electronic networks have become part of the everyday experience of business and government. The digital revolution and data compression capabilities extend the potential of communication technology by significantly reducing the cost of mass-

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[6] van der Heyden, T. "The Impact of New Communication Technologies on the Broadcasting Environment in Asia," paper prepared the annual conference of the Asian Mass Communication Research and Information Centre, Jakarta, June 1995.

[7] Talero & Gaudette, p. 9.

[8] Colle, R. "Covering the Last Mile of the Information Superhighway: Communication Shops for Rural Communication," paper prepared for the annual conference of the Asian Mass Communication Research and Information Centre, Jakarta, June, 1995.

produced consumer electronic goods and dramatically increasing the coverage area and broadcast power of satellites. While the promise of these technologies and other pieces of the Information Superhighway are substantial for cities and towns, relatively little has been said or done about systematically and strategically bringing their benefits to rural populations, especially in Third World nations.

Market prices, input availability, meteorological forecasts, potential pest hazards, results of agricultural research, adult and child healthcare, and basic education have potential value to rural families and businesses. Further, the ease of retrieving information from around the world makes it possible for people to search for the highest quality of information from a range of resources. The amount of information the farming family, farmers' organizations, extensionists and research institutions can use for farm management decision-making and rural welfare is growing rapidly, and, like seeds and fertilizers, information has become a vital resource in contemporary agriculture.

The challenge is to help rural people gain benefit from the Information Superhighway — beyond watching MTV via satellite in Uttar Pradesh. We start with the assumption that there *can* be a relationship between improved communication and improved welfare, especially if "improved" includes the chance for rural people to express their needs and priorities through access to facilities for sending as well as receiving information. Such international mandates as "Health for All," "Education for All," and improving the status of women depend on two-way flows of information between the center and the periphery as well as lateral flows across communities.

Systematic attempts to link information from outside the community to the community are varied. There is an extensive literature on agricultural extension systems and similar outreach efforts in health and nutrition. For example, the *kelompencapir* is an institution in Indonesia that links local communities to outside radio, television and print media.[9] Members of these listening, viewing and reading groups select from the media the information that is relevant to their community and then insert it into the local communication network. Elsewhere, "alternative media" exist widely, but, while local in focus, they tend to be isolated (and often deliberately so) from mainstream communication channels.[10]

Two communication revolutions

Thus, two parallel communication revolutions are occurring across the world. One is associated with the information superhighway and is characterized by its interlocking collection of telecommunications networks and computerized data-bases. Some lanes of the superhighway are private sector, some government, and they touch national, state and district level destinations. The other is the spontaneously, largely private sector, emergence of local communication enterprises which provide rental videotapes, local and long distance telephone access, photocopies and other products and services.

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[9]Atmadi, T. *The LVR Group: The Listeners, Viewers and Readers Group, Mechanism in Rural Communication to Create Dialogue at Grassroots Level*, Department of Information, Republic of Indonesia, Jakarta, 1986.

[10]See P. Lewis, "Alternative media in a contemporary social and theoretical context," in P. Lewis, ed., Alternative Media: Linking Global and Local, Reports and Papers on Mass Communication No. 107, UNESCO, Paris, 1993.

Some national and state governments in developed and developing countries have aggressively moved ahead to exploit information technology (IT) to establish "intelligent islands" and "multi-media information corridors." Somewhat rarer are governments that are linking IT to its ordinary citizens and especially those who live in more remote areas. Malaysia and Singapore have been among the most enterprising governments to move in this direction. Malaysia's Selangor State has started developing multimedia information kiosks which are located at state, district and municipal offices. The kiosks are one component of multipoint videoconferencing studios and interactive "voice fax application." According to a press report, the kiosks will be used by the State government "to disseminate information to the public, and to collect feedback from them on various development programmes and projects."[11] The public will be able to obtain information from the State Government's data bases through facsimile machines.

Ironically, one of the realities in developing nations is that governments worldwide are finding it difficult to institute effective information/communication programs for their development efforts or are finding it difficult to sustain some of the systems they have. For example, there is disenchantment with the performance of the extension systems because of performance, effectiveness and costs. Media such as radio, television, video, facsimile and telephone are not being used creatively for development although they are increasingly being used for business and entertainment purposes.

Nevertheless, throughout the world, the capacity to communicate is increasing dramatically along with the ability to digitize, compress and store information in various formats. In India, for example, the government's National Informatics Centre (NIC) has established extensive data bases and makes them available through telecommunication links to computer facilities at district level government offices.

Information as a product

New developments in the social science and technology of communication suggest that opportunities exist for re-shaping patterns of communication, especially in rural areas where the need for information is great but its availability scarce. One aspect of this re-shaping is the emphasis on *community participation* as an important model of communication and development; less obvious is an approach that stresses *information-seeking* as compared to information-giving as an information strategy. Participation and information-seeking, of course, are not mutually exclusive. In fact, both tie in with the principal theme of this paper.

The information-seeking approach suggests that information might be positioned as a commodity and that it be made available in much the same way as other commodities. A clue to the feasibility of this strategy appears in many nations where we can see the emergence of video rental shops, public telephone and fax offices, and photocopying services. We also see private entrepreneurs providing (for a fee) videotaping of weddings. And it's happening beyond the urban areas: while we may romanticize about the traditional ways of

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[11] Selangor takes first step into 'smart world.' *New Straits Times* [Malaysia], October 5, 1996, p. 6; "Selangor to set up information kiosk network," *New Straits Times*, July 5, 1996. Similar advances are apparent also in Singapore. See, for example: *A Vision of an Intelligent Island*, National Computer Board Singapore, 1992; *Library 2000, Investing in a Learning Nation*, Ministry of Information and the Arts, Singapore, 1994.

communication, in the countryside many rural people are into the new communication technology. Note the following situation reported by a friend:

> In Kenya, I saw quite sophisticated video technologies. In rural areas without mains electricity, one of my neighbors attracted customers to his small general store with a small television set, drawing power from a friend's *matatu* (small bus) battery. During the day the vehicle charged the battery, and in the evening it would power the television set. This set-up was much simpler and more practical--in sum, more appropriate--than the expensive solar cell or generator systems I've read about in project literature.
>
> Several of the bars in nearby Kisii town had even more sophisticated video systems. Through informal contacts, the owners had acquired videocassette recorders, large screen television sets, and video programs from the United States. [12]

A more elaborate but still highly localized system is growing elsewhere in Kenya. Regional Reach is an on-going program designed to bring free television screens to rural areas in Kenya that do not have access to any audio-visual media.[13] The organization arranges to have television monitors and video cassette players placed in rural shopping and trading centers around the country. People gather at these "video stations" to watch educational and informational programs on AIDS, primary health care, childcare and breastfeeding, agricultural development, and religion — as well as some entertainment and sports. All programs are supplied to the video watching station on video cassettes. These come from groups like UNICEF, the Ministry of Health and NGOs.

The operation – which pays for itself – is financed through advertising revenue from companies who wish to reach the rural audience. These include Coca Cola (drinks), Eveready (batteries), Proctor and Gamble (household goods), East African Industries, and others. By mid 1996, Regional Reach had set up 100 stations and expected to reach 140 by the end of 1996.

Recently, Regional Reach was exploring the possibility of adding print materials to the "stock" of video materials. Significantly, the principal reason people cited for attending the television centers was educational programs but also because "it brings friends together."

In Nigeria, business centers, which are small to medium size shops scattered around towns and villages, provide basic communication services to the community on a fee-for-service-basis. The services include: typing letters and business documents, photocopying documents, typesetting and desktop publishing, local and international telephone connections, fax services, and answering machines. I recently saw in Lucknow, India, a similar business operation that was actually called The Instant Communication Centre.

Communication Centers

The institution that seems likely to link grassroots people with relevant and important information sources most effectively is the community-based communication center. The idea of a community information center is not new. Many places around the world have community

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[12] Personal communication from Julian Kilker.

[13] The author is indebted to Ndunge Kiiti for this example from Kenya.

libraries which serve as information centers — based heavily on "book technology." Usually, these are run as a public service by a local government or non-profit agency. In recent years, libraries have broadened their scope of resources as they provide videotapes, audio cassettes, photocopying, and computer services such as desktop publishing and on-line access to databases. Information centers were successful in the Philippines until they were politicized several decades ago. In southern Sudan, a scheme was developed whereby a local entrepreneur was persuaded to serve the public by setting up a place where they could buy educational materials.

It's important to note two important characteristics about the newly emerging communication enterprises: most are *private sector, commercial undertakings*; and they are mostly *demand-driven* community businesses. For them, service is linked to profit. Another way of looking at this situation is that people in these communities are paying for communication and information services they value. This is in sharp contrast to conventional extension systems, health education programs, and other development-oriented systems which are typically top-down, government-funded operations. Privatization, of course, is a key word in government circles as governments try to transfer some of their activities to the private sector.

The Think Tank on Community-based Communication Centers

There are no universally agreed upon definitions for a community-based communication center (CCC). The term itself seems to be a recent addition to the terminology of development and communication. In its current use, CCC seems to be more than a *conventional* library that emphasizes the availability of published printed materials such as books and periodicals; the CCC idea is often associated with telecommunications, computers, data bases, and the Internet. And the notion of "community-based" is much more than a center being based in a village or town; CCC carries with it the idea of local entrepreneurship, local active participation, and service for the poorer sections of the community. "A well-functioning CCC is created from local initiatives and needs, and from a bottom-up perspective" [Halloway, from Think Tank].

In 1996, the World Bank officially entered the public discussions about CCCs and took a major step toward helping crystallize the CCC role and potential in rural communication by sponsoring a world wide symposium — via Internet — on the topic. This was another step in the Bank's move toward a broader perspective on rural communication that had not previously been evident in its long support of the Training and Visit Extension System. T&V featured a labor intensive top-down approach to technology transfer with no integral role for audio-visual media. In 1990, the Bank had adopted a pro-active policy toward including *participation* in Bank-supported projects. At about the same time, the Bank published a staff paper that explored the potential of communication technology in agricultural information systems.[14] And more recently, the Bank held an Extension Workshop on Alternative Mechanisms for Funding and Delivering Extension (Washington, June 1996)

There are several underlying themes in the Bank's efforts in these areas. These include: the growing importance of information and communication as elements in rural development — an importance beyond building PTT infrastructures; the need to improve and

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[14] Zijp, W., *Improving the Transfer and Use of Agricultural Information; A Guide to Information Technology*, Discussion paper 247, The World Bank, Washington, DC, 1994. See also: Umali, D. & Schwartz, L., *Public and Private Agricultural Extension; Beyond Traditional Frontiers*, Discussion Paper 236, The World Bank, Washington , 1994.

create rural communication institutions with management and operations in the hands of the local communities; and the importance of reducing government financial responsibility for these institutions by promoting privatization and a self-sustaining life for them.

The Bank initiated the international symposium ("Think Tank") on Community-based Communication Centers in June 1996 with about 30 participants, including a core of 20 experts and other spontaneous contributors. The Think Tank was scheduled to last for three weeks.

The remainder of this paper focuses on the concept of Community-based Communication Centers and especially the issues raised by the Think Tank. First a note on method: the ideas and comments that follow draw primarily on the comments contributed to the Think Tank discussion.[15] However, the author has expanded the resource base by following up on some of the leads provided by the Think Tank experts. These additional sources are identified in the footnotes; otherwise the materials quoted come from the Think Tank discussions themselves.

Community-based Communication Center Issues

1. Community-based communication centers are viable as local institutions, but there is no "one size fits all" model. Project Scope, which is active in setting up community-based "telecenters" in places ranging from the Chelsea Housing Authority in the Boston (USA) area to Kinshasa (Zaire) notes that telecenters will vary in the telecommunications equipment and services available to each community. The initial configuration is totally dependent on infrastructure and funds available. Project Scope's approach is based on the availability and accessibility of telecommunications "as a tool for connecting under-served populations – village by village, town by town, city by city."[16] The telecenter is "the actual physical facility which serves as the hub providing equipment and services. In addition, the telecenter "could be used as an incubator for small organizations, a meeting place for various groups, a public room for teleconferences, a training facility, a resource site — the list of possibilities is limited only by the community vision" (Manjourides). A similar institution, with its origin in Sweden, is the "telecottage" which appears primarily in Western Europe and Japan.

In contrast to these CCCs built primarily around telecommunications technology, others have different bases. Project RISE (Rural Information Service) in Pakistan starts from a library core. In a pilot phase in the mid-1990s, the Pakistan Library Association, the implementing agency, identified suitable locations for Village Information Centers (VIC). Initially, the VIC is planned as a non-lending library that provides services such as local newspapers, magazines and books (where the demand is greatest); development information such as "extension" literature in health, family planning, environmental issues and education (supplied by various institutions); reference service handled by experienced librarians of the PLA; bi-weekly lecture programs especially responding to demands of the uneducated; and an information clearinghouse on development projects in the village to assist in their coordination. The VIC also provides information about the village to development agencies.

The concept of the community-based communication center applies globally in the sense that it is relevant to developed and developing nations and to rural and urban settings in these nations. Even in communication-rich Singapore, some of the Community Centers

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[15] Readers can access the discussions at http://www.vita.org/technet/occarch/ocodisc.html.

[16] http://www.tiac.net/users/xur/telecn.htm

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(Clubs) are introducing courses in Information Technology and then making computers available in the Centers for the population in the constituency.

2. A self-sustaining formula is an important key to CCC survival. There was broad consensus about the need for CCCs to be community-*need* based so that demand for some services and products would generate income for the Center. Thus public/private sector collaboration is important in the nurturing of CCCs, with public funding some times necessary to subsidize feasibility (marketing) studies and other start-up costs, and the private sector and local community support phasing in over a specific period of time. Oksa points out the problem when CCCs are an all government funded operation: About five years ago Finland had about 50 rural telecottages, but today, after the government support is gone, only a few telecottages are alive, trying to finance themselves by selling services mostly to the public administration. The "down" side of Project RISE described above is that the Netherlands Library Development Project established two pilot VICs in Pakistan which were "quite successful and the locals were quite enthusiastic about newspapers, but we had to stop the funding. They have been mobilized and are now looking for other sources to continue the centers" (Kahn).

There seemed to be substantial support in the Think Tank for a mixture of CCC services: those that are of high enough demand for the community to pay for them and those that might be important enough that a government, NGO or the CCC itself might agree to provide them free for the public good — or the CCC might be paid to stock them for free distribution. Following is a sample of "products" that might give CCC more of a Communication *Shop* character (Colle).

(1) Local, national and international telephone service
(2) Facsimile service
(3) On-line connections to electronic data bases
(4) Document and data base searches on demand
(5) Hardcopy "bulletins" off the shelf on health, agriculture, nutrition, and "how-to" topics
(6) Awareness service and information-on-information
(7) Video library with development and entertainment tapes
(8) Audio library with development and entertainment tapes
(9) Recycled radio and television broadcasts from the radio and television services
(10) Local bulletins ("construction help needed," etc.)
(11) Audio-visual equipment rental
(12) E-mail connection to reach experts, government agencies, or personal contacts
(13) Information and programs produced *by people in the communities*[17]
(14) Photocopying services
(15) Photographic supplies and services
(16) Book loan (library)
(17) Distance education kits
(18) Desktop-publishing services
(19) Newspapers and periodicals
(20) Letter writing
(21) Battery recharging

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[17]This may be an opportunity for some people to become institutionalized as sources of information and advice through "packaging" them on videocassettes or audio cassettes and having the latter available in the CCC.

3. Though they are "community-based," CCCs tend to be more viable if they relate to a larger context, either regionally or nationally. In some places, telecottages are members of not-for-profit telecottage associations (Holloway). Noting the need to strengthen *national* information capability to service the needs of local organizations, Norman suggests the creation of electronic "banks" of knowledge about how to grow and expand information centers. "Such a facility," he comments, "could within a short time become a self-sustaining component of an international organization of CCCs." In laying out ideas for CCCs in India, Colle proposed a national association of CCCs which could help constituent organizations with entrepreneurship and information management training, serve as a broker for obtaining and commissioning information materials for groups of CCCs and help them negotiate favorable terms for purchase of equipment and services, and lobby government and development banks for start-up funding for low cost loans to CCCs. Rather than encroach on the "community-based" characteristic, the larger body would help insure its survival as a local entity.

4. To be successful, CCC's need reasonably well-qualified information managers. These are persons who can assess the community's information needs, add value to data, and be able to collect information from the community. A computer terminal standing in the corner of a grocery store is unlikely to maximize the potential of the information technology.

5. Obstacles to institutionalizing CCCs exist outside and within communities. These include:

Political conservatism and power: "Political barriers tend to be correlated with the felt need by governments to be in control of things; hence totalitarian governments are more likely than democratic ones to reject CCCs or wish to strongly restrict their activities" (Nilles).

- Similarly, governments may not put the welfare of rural people high on their priorities and, thus, ignore or overlook programs that would benefit rural communities.

- Government agencies, NGOs, and other elites do not recognize the importance of information resources for the community at large and doubt the community's need to have such a center and their ability to make it work. Similarly, the community itself may not recognize the value of information in managing their lives.

- Governments and other funders fail to recognize the need for long term commitment to a CCC project, starting with marketing research to explore the CCC viability as a private sector enterprise. "CCCs should show a reasonable promise of a satisfactory return on their investment...expect a well-planned CCC to take a minimum of three years to break even and find investors who can live with that." [Nilles. J.]

- Funders' and leaders' limited vision concerning (1) what even simple communication technology can offer in a community — without necessarily starting with highly sophisticated telecommunications and (2) the rapidly evolving infrastructures that are already allowing the private sector to exploit them for primarily personal profit rather than community gain. As one Think Tank participant noted, "some private entrepreneurs are already building communication shops; we're in a position of trying to catch up" (Colle).

- Governments and agencies do not recognize the need to create CCCs in stages and to start (as Project Scope does) with the demands, resources and conditions that are available and build, if necessary, as items like power come on line.

Think Tank follow-up

There was substantial consensus among Think Tank participants that community-based communication centers have substantial promise in development. This is not surprising inasmuch as the experts selected for the symposium were known to have a keen interest in the topic at the outset. Similarly, those "visitors" who contributed to the discussion brought in their own bias. Nevertheless, there was also consensus that widespread systematic support for the CCC would not be forthcoming — especially from governments and donor agencies — unless there was more empirical data to substantiate the amount of return that might result from investment. To this end, participants were invited to suggest locales where pilot projects could be undertaken in a way that would produce the desired data.

In addition to a call for pilot projects, there was a feeling that anecdotal information about existing projects or programs needed to be organized so that variables relating to CCCs could be analyzed more systematically. Such data compilation might begin, for example, with project profiles that include:

1. Mission of the CCC
2. Legal status of CCCs
3. Kind of CCC ownership
4. Their resources and facilities
5. Source and amount of start-up funding
6. Source(s) of operating funding
7. Length of time in operation
8. Kinds of products and services
9. Sources of products and services
10. Primary and secondary target clients
11. Cost of CCC products to clients
12. Number and kind of operational staff
13. Roles of community groups in CCC policy and management issues
14. Nature of formal and informal alliances with community and non-community groups
15. Measures of success or failure

The World Bank Think Tank CCC on the Internet opened up significant issues related to the availability of information at the grassroots. Underlying much of the discussion is the issue of sharing with people in both urban and rural communities the benefits usually available to a relatively small group of people who can routinely access information resources through telecommunications superhighways, databases, and ordinary communication

technologies. For many, CCCs may be a key to reaching such important global goals as "health for all" and "education for all."

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